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10/082,269	02/26/2002	Motoyuki Nishizawa	020243	3646
23850	7590	04/01/2004	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP			CONNELLY CUSHWA, MICHELLE R	
1725 K STREET, NW			ART UNIT	
SUITE 1000			PAPER NUMBER	
WASHINGTON, DC 20006			2874	

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/082,269

**Applicant(s)**

NISHIZAWA ET AL.

**Examiner**

Michelle R. Connelly-Cushwa

**Art Unit**

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-8 is/are allowed.
- 6) ☒ Claim(s) 1-3, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0602</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims 1-8, 16 and 17 in the Response filed March 1, 2004 is acknowledged.

Claims 9-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the response filed March 1, 2004.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The prior art documents submitted by applicant in the Information Disclosure Statement filed on June 24, 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

### ***Drawings***

Six (6) sheets of formal drawings were filed on February 26, 2002 and have been accepted by the Examiner.

### ***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

**Claims 3, 5 are objected to because of the following informalities:**

Regarding claim 3; "reflection angle" in line 12 of claim 3 should be changed to – deflection angle--. Claim 3 has been examined as though this change has been incorporated.

Regarding claim 5; the claim inherently contains the deficiencies of any base or intervening claims from which it depends.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-3, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Deliwala (US 2003/0026545 A1).**

Regarding claims 1-3, 16 and 17; Figures 13, 14 and 15A-15D and paragraphs [0132]-[0141] of Deliwala disclose an optical modulator (optical waveguide device, 100) comprising:

- an optical waveguide (106) formed of a dielectric material having an electro-optical effect; and

- electrodes (input prism gate electrode 1304, output prism gate electrode 1306, first body contact electrode 118 and second body contact electrode 122; see paragraphs [0133]-[0134]) opposed to each other across the optical waveguide (106), an electric field being applied between the electrodes to change a refractive index (propagation constant) of the dielectric material to thereby control a propagating direction of a signal light propagating in the optical waveguide (see Figure 14);
- wherein the dielectric material has a first refractive index / first deflection angle in its initial state, has a second refractive index / second deflection angle by application of an electric field of a first polarity, and retains a third refractive index / third deflection angle obtained after the electric field has been removed (the third refractive index / third deflection angle being the same as the first refractive index / first deflection angle if the electric field present after the electric field of the first polarity is removed is the same as it was initially, wherein the initial electric field may have been zero; or being different from the first and second refractive indices / first and second deflection angles if another electric field is applied after the electric field of the first polarity has been removed, the another electric field being different from both the initial electric field and the electric field of the first polarity); and

- wherein the dielectric material having the third refractive index / third deflection angle has the first refractive index / first deflection angle by application of an electric field of a second polarity different from the first polarity and removal of the electric field (the dielectric material will have the first refractive index / first deflection angle if the electric field present after the removal of the electric field of the second polarity is the same as the initial electric field).

**Claims 1-3, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Guo (US 6,449,084 B1).**

Regarding claims 1-3, 16 and 17; Figures 1A and 1B and column 4, line 15, through column 5, line 29 of Guo disclose an optical modulator (optical deflector) comprising:

- an optical waveguide (12) formed of a dielectric material having an electro-optical effect; and
- electrodes (triangle-shaped electrodes 18a and 18b, and bottom electrode 16) opposed to each other across the optical waveguide (12), an electric field being applied between the electrodes to change a refractive index of the dielectric material to thereby control a propagating direction of a signal light propagating in the optical waveguide (see column 4, line 43, through column 5, line 29);
- wherein the dielectric material has a first refractive index / first deflection angle in its initial state, has a second refractive index /

second deflection angle by application of an electric field of a first polarity, and retains a third refractive index / third deflection angle obtained after the electric field has been removed (the third refractive index / third deflection angle being the same as the first refractive index / first deflection angle if the electric field present after the electric field of the first polarity is removed is the same as it was initially, wherein the initial electric field may have been zero; or being different from the first and second refractive indices / first and second deflection angles if another electric field is applied after the electric field of the first polarity has been removed, the another electric field being different from both the initial electric field and the electric field of the first polarity); and

- wherein the dielectric material having the third refractive index / third deflection angle has the first refractive index / first deflection angle by application of an electric field of a second polarity different from the first polarity and removal of the electric field (the dielectric material will have the first refractive index / first deflection angle if the electric field present after the removal of the electric field of the second polarity is the same as the initial electric field).

***Allowable Subject Matter***

**Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

**Claims 6-8 are allowed.**

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known, however, the invention of claims 4-8 distinguishes over the prior art of record for the following reasons.

Regarding claims 4 and 5; the claims are allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical deflector as defined in claim 4 or in claim 5, wherein the dielectric film is formed of  $(\text{Pb}_{1-w}\text{M}_w)(\text{Zr}_{1-x-y}\text{Ti}_x\text{Sn}_y)_z\text{O}_3$  (wherein  $0 \leq w \leq 0.5$ ,  $0 < x \leq 0.5$ ,  $0 < y \leq 0.5$ ,  $0.8 \leq z \leq 1.2$ ; and M one kind, or two or more kinds of elements selected from a group consisted of lanthanum, niobium, tantalum, barium and strontium) in combination with the limitations of claims 2 and 3, respectively.

Regarding claims 6-8; the claims are allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical deflector as defined in claim 6, wherein the dielectric film is formed of  $(\text{Pb}_{1-w}\text{M}_w)(\text{Zr}_{1-x-y}\text{Ti}_x\text{Sn}_y)_z\text{O}_3$  (wherein  $0 \leq w \leq 0.5$ ,  $0 < x \leq 0.5$ ,  $0 < y \leq 0.5$ ,  $0.8 \leq z \leq 1.2$ ; and M one kind, or two or more kinds of elements selected from a group consisted of lanthanum, niobium, tantalum, barium and strontium) in combination with the other limitations of claim 6. Claims 7 and 8 depend from claim 6.



Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claims 4-8.

***Conclusion***

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

*Michelle R. Connelly-Cushwa*  
Michelle R. Connelly-Cushwa  
Patent Examiner  
March 26, 2004